**Run PGEs Using Scheduler**

**Steve Berrick**

520-TD-001-002                                                              SSI&T 8-1

## Discussion Topics

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# Run PGEs

- **Generating data processing request and supporting files**
- **Executing PGEs using AutoSys**
- **Comparing output again with the SCF-produced output**

520-TD-001-002                                                                                    SSI&T 8-2

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## Discussion Topics

Now that the PGE has been registered into PDPS, we can generate as many instances of it as we wish and apply those instances to input files received from the specific instrument or processed by another version of the PGE.

**Generating Data Processing Request and Supporting Files**

**Purpose:**

• **To generate Data Processing Requests (DPRs) based on PGEs registered in the PDPS database and submit the DPR into the PDPS for processing**

**Tool:**

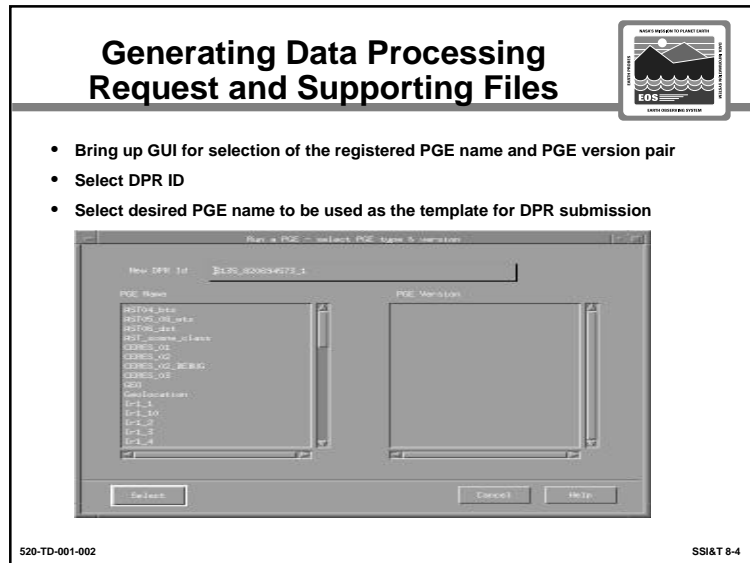• **SSIT Manager, DPR Processing GUI**

**Assumptions:**

• **The science software executables and any processing scripts, as well as input and support files, are available on an auto-mounted disk volume that can be accessed from both the Sun and SGI machines. The SSIT Manager GUI is running in a window initiated from the Sun machine. Registered PGEs exist in the PDPS database to serve as the basis for the DPR specification.**

520-TD-001-002                                                                                          SSI&T 8-3

## Discussion Topics

**Purpose**: To generate Data Processing Requests (DPRs) based on PGEs registered in the PDPS database and submit the DPR into the PDPS for processing

**Tools/Materials/Assumptions**: The science software was previously built successfully using the SCF version of the SDP Toolkit. The science software executables and any processing scripts, as well as input and support files, are available on an auto-mounted disk volume that can be accessed from both the Sun and SGI machines. The SSI&T Manager GUI is running in a window initiated from the Sun machine. Registered PGEs exist in the PDPS database to serve as the basis for the DPR specification.

## Discussion Topics

**Step 1**.  Bring up GUI for selection of the registered PGE name and PGE version pair that constitute the basis for the DPR to be submitted.

- Select the Run menu from the SSI&T Manager GUI.

- Choose the 'Processing of PGEs' option.

    This will spawn an Xterm window labeled 'Run a PGE - select PGE type & version'

**Note.**  the 'PGE type' in the Xterm window label is equivalent to 'PGE Name'.

**Step 2**. Select DPR ID.

- Near the top of the Xterm window labeled 'Run a PGE - select PGE type & version' is a sub-window labeled 'New DPR Id'.

**Note**.  When this Xterm window is initiated, this sub-window is automatically loaded with a PDPS system generated DPR ID string.  No action or modification of the sub-window contents is required if the system-generated DPR ID is desired.
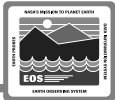
- In order to define a different DPR ID, click on the 'New DPR ID' sub-window and delete the system-generated DPR ID.

**Note**.  Entering a new DPR ID and then entering return from this sub-window will change the DPR ID in the PDPS database once the DPR is submitted. The DPR ID can be modified by the user, but the DPR ID must be in the form a string which is 36 non-blank characters or less.

**Step 3**.  Select desired PGE name of the registered PGE to be used as the template for this DPR submission.

- Choose desired PGE by clicking on one of the options listed in the 'PGE Name' sub-window, scrolling as necessary to view all PGE names with versions currently registered in the PDPS database.    The 'PGE Version' sub-window at right will be blank until a PGE name has been selected.

## Generating Data Processing Request and Supporting Files

- **Select desired PGE version to be used as the template for DPR submission**

- **Bring up a GUI for confirming or modifying the details of the DPR**

- **Accept or modify the executable to be used in running the DPR**

- **Accept or modify the location and root name of the DPR-specific PCF**

520-TD-001-002       SSI&T 8-5

## Discussion Topics

**Step 4**. Select desired PGE version for the registered PGE to be used as the template for this DPR submission.

- Choose desired PGE version by clicking on one of the options listed in the 'PGE Version' sub-window, scrolling as necessary to view all PGE versions which have been registered for the selected PGE name.

**Step 5**. Bring up a GUI for confirming or modifying the details of the DPR.

- Click on the Select button in the lower left of the Xterm window labeled 'Run a PGE - select PGE type & version'.

> This will spawn an Xterm window labeled 'DPR'

**Note.** The Xterm window labeled 'Run a PGE - select PGE type & version' will still exist in the background after the new Xterm window 'DPR' has been initiated

**Step 6.** Accept or modify the executable to be used in running the DPR.

- To change the executable to be run, click on the 'Directory' or 'Filename' sub-windows for the field labeled 'Executable' and edit the field(s).

**Note.** The filename pointed may be a binary executable, or shell scripts that themselves call and run a binary executable.The directory path and filename of the executable or script pointed to must be reside on an auto-mounted disk volume.

**Step 7.** Accept or modify the location and root name of the file that will be written containing a DPR-specific copy of the process control file information.

- To change the directory path and/or file name to be written to, click on the 'Directory' or 'Filename' sub-windows for the field labeled 'Process Control File' and edit the field(s).

**Generating Data Processing
Request and Supporting Files**
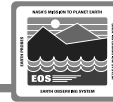
- **GUI for confirming or modifying the details of the DPR**



520-TD-001-002                                                     SSI&T 8-6

## Discussion Topics

**Generating Data Processing
Request and Supporting Files**

- **Accept or modify the location and name of the output file containing DPR resource profile information**

- **Accept or modify the PGE dependencies for this DPR**

520-TD-001-002                                                                                           SSI&T 8-7

## Discussion Topics

**Note.** The Process Control File referred to here is created when the DPR is submitted for execution. It is a copy of the process control information database entries that have been loaded from the original PCF and then modified. The output file will be written in the form of a PCF. The output file name will be of the form ['Filename'].[DPR ID]. For example, if the 'Filename' field is 'Geolocation_L1AÕ and the DPR ID has been user-defined to be Ôbright_temp_test5Õ, the resulting file written to the specified path will be Geolocation_L1A.bright_temp_test5

**Step 8.** Accept or modify the location and name of the file that will be output containing DPR resource profile information.

- To change the directory path and/or file name to be written to, click on the 'Directory' or 'Filename' sub-windows for the field labeled 'Resource Profile Output'.

**Note.** This file is created by the PDPS after the DPR has executed. Included below are sample contents from a resource profile output file:Time spent executing in user mode 170 sec 870615 usecTime spent executing in the system 3 sec 870615 usecMaximum resident set size utilized: 6256 KbytesIntegral shared text memory size 0Integral unshared data size 0Integral unshared stack size 0Page reclaims (number of page faults serviced without any I/O activity ): 1402Page faults (number of page faults serviced that required I/O activity) : 2Process swaps 0Block input : 482Block output: 19Messages sent 0Messages received 0Signals received 56Voluntary context switches 255Involuntary context switches 0

**Step 9.** Accept or modify the PGE dependencies for this DPR. These entries enable DPRs to be chained together and conditionally executed within the PDPS.

- Creating new PGE Dependencies is performed by clicking on the New button at the right of the 'Edit PGE Dependency' sub-window, entering the new dependency within the sub-window and then entering return to add it.

- Modifying existing dependencies of this DPR on other DPRs is performed by clicking on the PGE Dependency entry, modifying it within the 'Edit PGE Dependency' sub-window, and then entering return to add the modification.

## Generating Data Processing Request and Supporting Files

- **Accept or modify the resource dependencies for this DPR**

- **Bring up the GUI screen that displays this DPR's user-defined parameter and file mappings**

520-TD-001-002                                                                                          SSI&T 8-8

## Discussion Topics

**Note.**  Each PGE dependency entry is comprised of two character strings. The first string can have one of two values, either 'SUCCESS' or 'FAILURE', and represents the completion status that must have occurred for a specified DPR, or else the current DPR will not be executed.  The second string is the DPR ID of the processing job upon which the current DPR  depends.  Examples of valid PGE Dependency entries are:   SUCCESS MODIS_L1A.109_43   FAILURE 17949_820183161_1

**Step 10.**  Accept or modify the resource dependencies for this DPR.

- Creating new Resource Dependencies is performed by Clicking on the New button at the right of the 'Edit Resource Dependencies' sub-window, entering the new requirement within the sub-window and then entering return to add it.

- Modifying existing Resource Dependencies is performed by clicking on the Resource Dependency entry, modifying it within the 'Edit Resource Dependency' sub-window, and then entering return.

**Note.**  Any new or modified fields in the 'Resource Dependencies' sub-window are stored in database entries with the registered PGE; however, the PDPS does not use these dependencies at this time.The items in the 'Resource Dependencies' are stored in the database in PeV form.  The Resource Dependency entry must be comprised of three items:

> a) resource type string (maximum 36 characters)

> b) resource operator, such as =, <, or >= (maximum 2 characters)

> c) resource value string (maximum 36 characters)

**Step 11.**  Bring up the GUI screen that displays this DPR's user-defined parameter and file mappings.

- From the Xterm window labeled 'DPR', click on the Mappings button.

> This will spawn an Xterm window labeled 'Parameter/File Mappings'

## Discussion Topics

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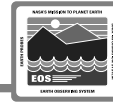
**Generating Data Processing
Request and Supporting Files**

- **Accept or modify user-defined parameters for the
  DPR**
- **Accept or modify existing file mappings for the DPR**

520-TD-001-002                                                                                      SSI&T 8-10

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## Discussion Topics

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**Step 12.**  Accept or modify user-defined parameters for this DPR.

- Modifying user-defined parameters is performed by clicking on 'Parameters' sub-window
  entry.

    This places the parameter's value in the sub-window at right which is labeled '
    Parameter Mapping' where it can then be edited.

- Enter return to add your modification.

**Note.**  Parameter labels (File logical ID, Science type, etc.) and parameter mappings can be
modified from the DPR GUIs, however the 'Parameters' entries themselves cannot be
deleted from the PDPS database at this stage.  If it is desired to remove a entire user-defined
'Parameter' entry, the user must go back and do so at the PGE Registration level via the
PGE Registration GUI screen functions.

**Step 13.**  Accept or modify existing file mappings for this DPR.

- Modifying existing file mappings is performed by clicking on 'Files' sub-window entry.

  This places the file name and directory path appear in the sub-window at right which is
  labeled 'File Mappings' where it can then be edited.

- Enter return to add your modification.

**Note.**  File mapping labels (File logical ID, Science type, etc.) and file mappings can be
modified from the DPR GUIs, however the 'Files' entries themselves cannot be deleted from
the PDPS database at this stage.  If it is desired to remove a entire user-defined 'File' entry,
the user must go back and do so at the PGE Registration level via the PGE Registration GUI
screen functions.

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**Generating Data Processing
Request and Supporting Files**

- **Commit the user-defined parameter and file
  mappings for the DPR**

- **Submit the Data Processing Request into the PDPS
  or cancel the DPR**

520-TD-001-002                                                                                                                  SSI&T 8-11

## Discussion Topics

**Step 14.** Commit the user-defined parameter and file mappings for this DPR.

- Click on the Close button in the lower left of the Xterm window labeled 'Parameter/File
  Mappings'.

  The Xterm window labeled 'Parameter/File Mappings' will automatically be closed when the
  Close button has been selected.

**Step 15.** Submit the Data Processing Request into the PDPS, or cancel the DPR.

- Click on the Submit button at the lower left of the Xterm window labeled 'DPR' to register
  the information for DPR.

- Click on the Cancel button at the lower right of the Xterm window labeled 'DPR' to cancel
  this DPR submission.

**Note.** Clicking on either of the Submit or Cancel buttons will close the Xterm window labeled
'DPR'.

## Monitoring PGEs using AutoSys

**Purpose:**

• **To monitor the DPR execution via AutoSys**

**Tool:**

•   **SSIT Manager, AutoSys**

**Assumptions:**

• **The science software executables and any processing scripts, as input and support files are available on an auto-mounted disk volume that can be accessed from both the Sun and SGI machines.  The SSI& T Manager GUI is running in a window initiated from the Sun machine. The science software and process control files have previously undergone examination with the code and PCF checkers.  DPR(s) have been submitted into the PDPS for processing**

**520-TD-001-002**                                                    **SSI&T 8-12**

## Discussion Topics

**Purpose**: To monitor the DPR execution via Autosys.

**Tools/Materials/Assumptions**:

The science software executables and any processing scripts, as input and support files are available on an auto-mounted disk volume that can be accessed from both the Sun and SGI machines.  The SSI&T Manager GUI is running in a window initiated from the Sun machine. The science software and process control files have previously undergone examination with the code and PCF checkers.  DPR(s) have been submitted into the PDPS for processing.
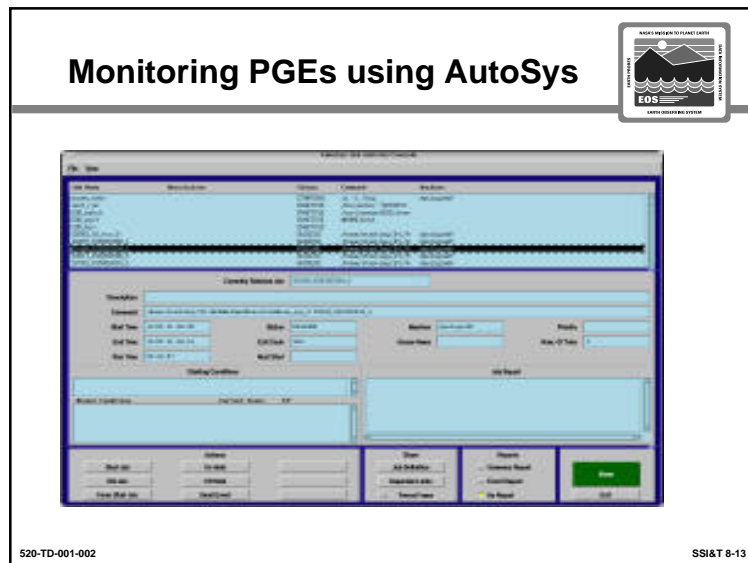
**Monitoring PGEs using AutoSys**

520-TD-001-002                                                                          SSI&T 8-13

## Discussion Topics

The Job Activity Console is divided into three regions: Job List, Currently Selected Job, and Action Area.

- Job List. this region displays a list of all the jobs that are defined to AutoSys, subject to the job selection criteria currently in effect. Each entry in the Job List contains the most pertinent information about a single job:

    – Job name

    – Description

    – Current Status

    – Command to be executed (or currently executing command)

    – Machine on which the job is to be run (or currently running)

- If the job is a File Watcher Job, the file to watch for appears in the "Command" column; if the job is a Box Job, the "Command" column is left empty. Together, all the entries in the Job List provide a handy snapshot of the entire system, across multiple machines, and at any time

- You can select any job in the Job List by single-clicking on the line on which the job's information displays. When you do this, the selected job becomes the "currently selected" job, and the window displays more detailed information about the job in the Currently Selected Job region.

- The Job List region has its own scroll bar along the right side to scroll down extensive lists. Using the X resources file, you can configure the relative sizes of the columns in the Job List. You can also specify the length of each field, as well as the spacing between fields.

**Monitoring PGEs using AutoSys**

- **Initiate the AutoSys monitor GUI**

- **Select the DPRs to be displayed in the 'AutoSys Job Activity Console'**

520-TD-001-002 SSI&T 8-14

## Discussion Topics

**Step 1.** Initiate the Autosys monitor GUI in order to observe the status of the DPR as it executes.

- Select the Run menu from the SSI&T Manager GUI.

- Choose the 'AUTOSYS Monitor' option.

  This will spawn an Xterm window labeled 'AutoSys Job Activity Console'

**Step 2.** Select the DPRs that are to be displayed in the 'Autosys Job Activity Console' Xterm window.

- Select the View menu from the 'Autosys Job Activity Console' Xterm window.

- Choose the 'Select Jobs' option.

  This will spawn an Xterm window labeled 'Job Selection'.

- If no changes to the existing job listing criteria are needed, click on the Cancel button to close the 'Job Selection' Xterm window.

**Note.** Use the provided options to modify the DPR job list based on the values of job name (i.e. DPR ID), execution status and processing machine.

Options are also provided in the 'Job Selection' Xterm window that allow the user to specify how the list of the DPR jobs meeting the job selection criteria will be sorted when displayed.

- To apply the desired job selection criteria to the list in the Xterm window labeled 'Job Selection', click on the Apply button.

- As necessary, repeat the steps of modifying the job selection criteria and clicking on the Apply button to commit them.

- Click on the OK button in the Xterm window labeled 'Job Selection' when the job selection criteria are as desired.

  This will close the Xterm window labeled 'Job Selection'.

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**Monitoring PGEs using AutoSys**

- **View details of a single DPR in the PDPS**

- **View the existing event report on the selected DPR**

520-TD-001-002                                                                           SSI&T 8-15

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## Discussion Topics

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**Step 3.**  View details of a single DPR in the PDPS.

**Note.** The upper most sub-window of the 'Autosys Job Activity Console' Xterm window contains a dynamically updated list of the DPRs currently in the PDPS.

- Scrolling as necessary within the sub-window, click on and highlight the desired DPR job entry.

  This will cause the available job status information for the selected DPR job to be presented in several sub-windows below the DPR job list.

**Step 4.**  View the existing Event Report on the selected DPR.

- In the lower right section of the 'Autosys Job Activity Console' Xterm window labeled 'Reports', click on the middle diamond button in order to select the option labeled 'Event Report'.

  This will bring the job event status for the selected DPR into the sub-window directly above the 'Reports' section.

**Monitoring PGEs using AutoSys**

- **Modify the execution status of a DPR**

- **View or modify the details of any processing alarms
  for a single DPR**

520-TD-001-002                                                          SSI&T 8-16

**Discussion Topics**

**Step 5.** As necessary, modify the execution status of a DPR.

- Under the lower left section of the 'Autosys Job Activity Console' Xterm window labeled 'Actions',  click on one of the buttons to send an event action into the PDPS for the selected DPR in order to alter the DPR processing.

    The existing action buttons include Start Job, Kill Job, Force Job Start, On Hold, Off Hold and Send Event.

**Note.** Clicking on the Start Job, Kill Job, Force Job Start, On Hold or Off Hold buttons spawns a small Xterm dialog box labeled 'Question'.  The user must click on either a yes or a no button in order to answer the question:

    – Ready to send event: <EVENT> for job: <DPR ID>   OK to continue?

For the five actions listed above, the <EVENT> in the 'Question' window will be STARTJOB, KILLJOB, FORCE_STARTJOB, JOB_ON_HOLD or JOB_OFF_HOLD respectively.

Clicking on the Send Event button spawns an Xterm window labeled 'Send Event', which allows the user to specify the event type, priority and comment to be sent for the selected DPR.  The user may also use this Xterm window to choose the time at which the event is to be sent.

- Click on the Execute button to submit the event, or click on the Cancel button.

**Note.** The user may not have the privileges necessary to perform certain of these functions.

**Step 6.** View or modify the details of any processing alarms for a single DPR.

- In the lower right section of the 'Autosys Job Activity Console' Xterm window, click on the Alarm button.

    This will spawn an Xterm window labeled 'Alarm Manager'.   <FURTHER DETAILS TBD>

**Note.** User may not have the privileges necessary to perform certain of these functions.

**Monitoring PGEs using AutoSys**

- **View the DPR job(s) <u>upon which</u> the selected DPR depends**

- **View the DPR job(s) <u>that depend</u> on the selected DPR**

- **Exit the AutoSys monitor**

520-TD-001-002                                                                           SSI&T 8-17

## Discussion Topics

**Step 7.** View the DPR job(s) upon which the selected DPR depends.

- Above the 'Actions' section of the 'Autosys Job Activity Console' Xterm window is a sub-window labeled 'Starting Conditions'. Each entry in this sub-window contains two items:

    a) the execution status that must result from a given DPR execution before the selected DPR can execute,

and

    b) the DPR ID of a job upon which the selected DPR depends.

**Step 8.** View the DPR job(s) that depend on the selected DPR.

- In the lower section of the 'Autosys Job Activity Console' Xterm window labeled 'Show', click on the Dependent Jobs button.

    This will spawn an Xterm window labeled 'Dependent Jobs' which lists the DPR IDs of all jobs that depend on the execution status of the currently selected DPR.

- Click on the Close button to close the 'Dependent Jobs' Xterm window.

**Step 9.** Exit the Autosys monitor.

Closing the Autosys monitor can be performed by either of two methods

- Either click on the Exit button in the lower right of the 'Autosys Job Activity Console' Xterm window,

or

- select the 'Exit' option from the 'File' menu.

**Note.** Both of these options spawn an Xterm dialog box labeled 'AutoSys JAC Exit', which asks the user to confirm the desired exit from the Autosys Job Activity Console.

- Click on the OK button to exit, or click on Cancel button.